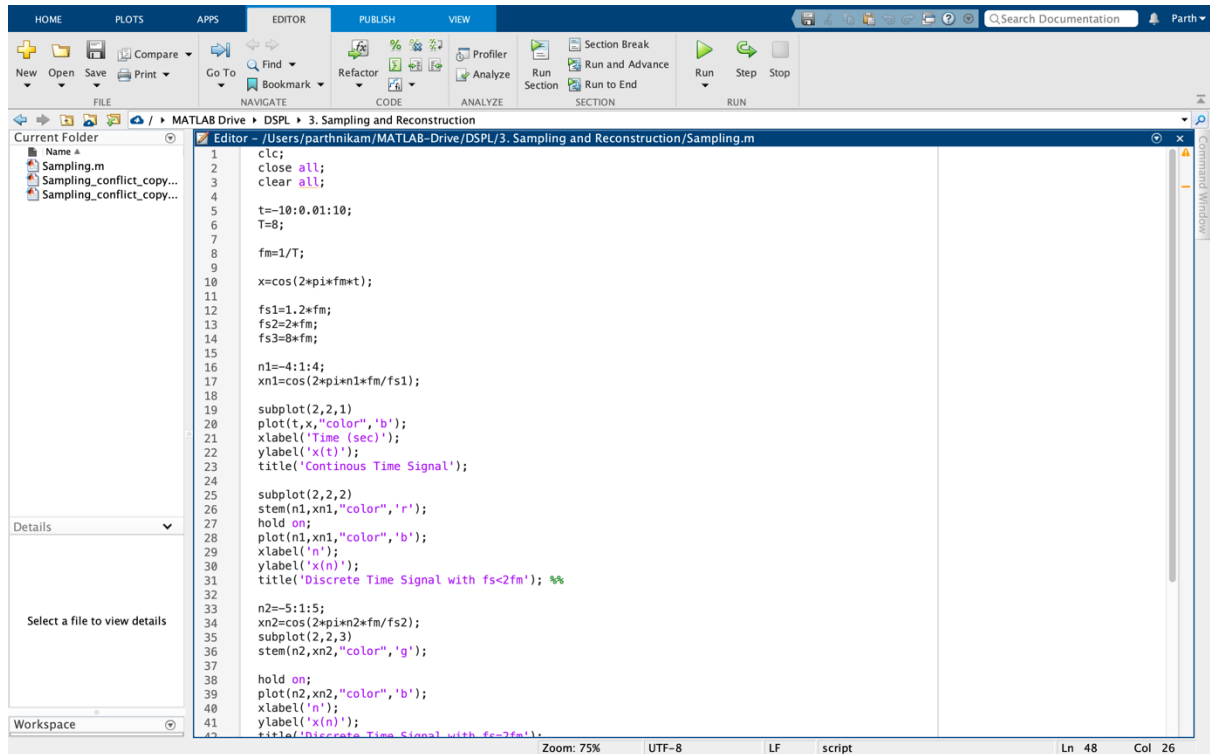


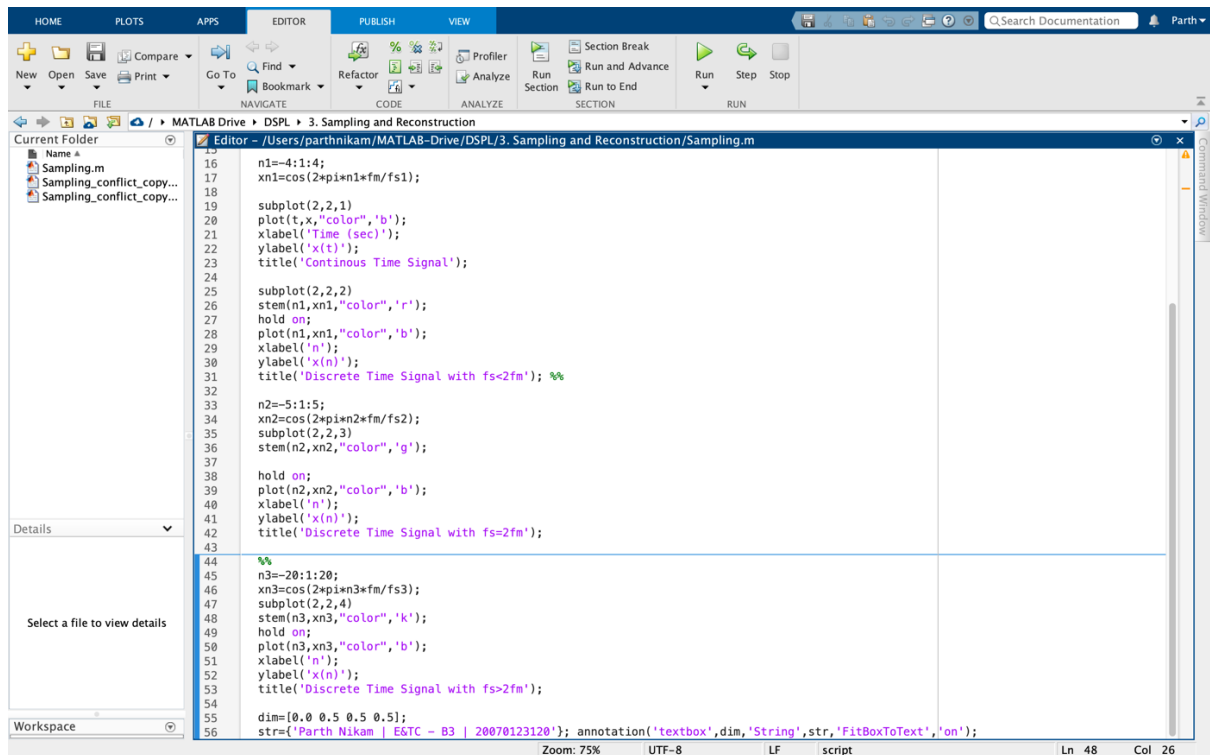
# Digital Signal Processing Lab

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E&TC – B3

## Experiment 3: Sampling and Reconstruction



```
1 clc;
2 close all;
3 clear all;
4
5 t=-10:0.01:10;
6 T=8;
7
8 fm=1/T;
9
10 x=cos(2*pi*fm*t);
11
12 fs1=1.2*fm;
13 fs2=2*fm;
14 fs3=8*fm;
15
16 n1=-4:1:4;
17 xn1=cos(2*pi*n1*fm/fs1);
18
19 subplot(2,2,1)
20 plot(t,x,"color","b");
21 xlabel('Time (sec)');
22 ylabel('x(t)');
23 title('Continuous Time Signal');
24
25 subplot(2,2,2)
26 stem(n1,xn1,"color","r");
27 hold on;
28 plot(n1,xn1,"color","b");
29 xlabel('n');
30 ylabel('x(n)');
31 title('Discrete Time Signal with fs<2fm'); %%
```



```
32
33 n2=-5:1:5;
34 xn2=cos(2*pi*n2*fm/fs2);
35 subplot(2,2,3)
36 stem(n2,xn2,"color","g");
37
38 hold on;
39 plot(n2,xn2,"color","b");
40 xlabel('n');
41 ylabel('x(n)');
42 title('Discrete Time Signal with fs=2fm');
43
44 %%
45 n3=-20:1:20;
46 xn3=cos(2*pi*n3*fm/fs3);
47 subplot(2,2,4)
48 stem(n3,xn3,"color","k");
49 hold on;
50 plot(n3,xn3,"color","b");
51 xlabel('n');
52 ylabel('x(n)');
53 title('Discrete Time Signal with fs>2fm');
54
55 dim=[0.0 0.5 0.5 0.5];
56 str=('Parth Nikam | E&TC – B3 | 20070123120'); annotation('textbox',dim,'String',str,'FitBoxToText','on');
```

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